

PATENT

Atty. Dkt. No. APPM/003049.X1/CP/DT/PJS

**IN THE DRAWINGS:**

The attached sheets of drawings include replacement formal drawings for sheets 1-4. These sheets, which include Figures 1-4, replace the original sheets.

**Attachment: Replacement Sheets**

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**REMARKS**

This is intended as a full and complete response to the Final Office Action dated July 15, 2005, having a shortened statutory period for response set to expire on October 15, 2005. Please reconsider the claims pending in the application for reasons discussed below.

In the specification, the paragraph [0033] has been amended to correct minor editorial problems. Replacement sheets 1-4, including Figures 1-4, replace the original sheets.

Claims 8, 10-17, 19, 20, 22, 23, 31-39 and 47-50 remain pending in the application and are shown above. Claims 10, 12, 15, 33, 37, and 39 have been cancelled by Applicant. Claims 8, 11-14, 16-17, 19-20, 22-23, 31, 32, 35 and 47-50 are rejected, claims 10, 15, 33 and 34 are objected to, and claims 36-39 are indicated to be allowable by the Examiner. Claims 8, 14, 31, 34-36 and 47 are amended to incorporate allowable subject matter. Reconsideration of the rejected claims is requested for reasons presented below.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Konecni, et al* (EP 0 849 779 A2) in view of *Van Cleemput, et al* (U.S. 5,872,058). Claims 8, 11-13 and 22 are also rejected under 35 U.S.C. 103(a) as being unpatentable over *Tran, et al* (U.S. 5,534,445) in view of *Van Cleemput, et al* (U.S. 5,872,058). Claims 14, 16-17, 19-20 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Tran, et al* (U.S. 5,534,445) in view of *Van Cleemput* (U.S. 5,872,058). Claims 31-32 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Konecni et al* (EP 0 849 779 A2) in view of *Van Cleemput et al* (U.S. 5,872,058). Claims 47-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Tran et al* (U.S. 5,534,445) in view of *Van Cleemput et al* (U.S. 5,872,058). Applicant respectfully traverses the rejections. Claims 8, 14, 31, 34-36, and 47 are amended to incorporate allowable subject matter.

*Konecni, Van Cleemput, and Tran*, alone or in combination, do not teach, show, or suggest exposing a patterned substrate surface to a plasma generated from a gas mixture consisting of argon, helium and hydrogen, and increasing the helium content of the plasma to increase etching of the patterned substrate surface, wherein the gas

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mixture comprises less than about 75% by volume of argon, wherein the hydrogen is provided to the processing chamber in a mixture of about 95% by volume of helium and about 5% by volume of hydrogen, as recited in amended claim 8, and claims 11, 13, 19 and 22 dependent thereon. Withdrawal of the rejection is respectfully requested.

Also, *Konecni, Van Cleemput, and Tran*, alone or in combination, do not teach, show, or suggest exposing a patterned substrate surface to a plasma generated from a gas mixture comprising argon, helium and hydrogen in a processing chamber, wherein the plasma is capacitively and inductively powered, and increasing the helium content to increase etching of the patterned substrate surface, wherein the gas mixture comprises less than about 75% by volume of argon, wherein the hydrogen is provided to the processing chamber in a mixture of about 95% by volume of helium and about 5% by volume of hydrogen, as recited in amended claim 14, and claims 16, 17, 20, and 23 dependent thereon. Withdrawal of the rejection is respectfully requested.

*Konecni, Van Cleemput, and Tran*, alone or in combination, do not teach, show, or suggest exposing a patterned substrate surface at a pressure between about 5 mTorr and about 20 mTorr to a plasma generated from a gas mixture consisting of argon, helium and hydrogen at a power level between about 300 watts and about 450 watts, and increasing the helium content of the plasma to increase etching of the patterned substrate surface, wherein the gas mixture comprises less than about 75% by volume of argon, wherein the gas mixture comprises about 50% by volume of argon, about 48% by volume of helium, and about 2% by volume of hydrogen, as recited in amended claim 31, and claim 32 dependent thereon. Withdrawal of the rejection is respectfully requested.

Additionally, *Konecni, Van Cleemput, and Tran*, alone or in combination, do not teach, show, or suggest exposing a patterned substrate surface at a pressure between about 5 mTorr and about 20 mTorr to a plasma generated from a gas mixture consisting of argon, helium and hydrogen at a power level between about 300 watts and about 450 watts; and increasing the helium content of the plasma to increase etching of the patterned substrate surface, wherein the gas mixture comprises less than about 75% by volume of argon, wherein the gas mixture comprises about 25% by volume of argon, about 71% by volume of helium, and about 4% by volume of hydrogen, as recited in

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claim 34, and claim 35 dependent thereon. Withdrawal of the rejection is respectfully requested.

*Konecni, Van Cleemput, and Tran*, alone or in combination, do not teach, show, or suggest exposing a patterned substrate surface at a pressure between about 5 mTorr and about 20 mTorr to a plasma generated at a power level between about 300 watts and about 450 watts from a gas mixture consisting of less than 75% by volume of argon and a mixture of about 95% by volume of helium and about 5% by volume of hydrogen, and increasing the helium content of the plasma while decreasing the argon content of the plasma, wherein the patterned substrate comprises a feature having an aspect ratio greater than about 4 to 1, as recited in claim 36, and claim 38 dependent thereon. Withdrawal of the rejection is respectfully requested.

Also, *Konecni, Van Cleemput, and Tran*, alone or in combination, do not teach, show, or suggest depositing a conductive or semiconductive sublayer, depositing a dielectric layer on the sublayer, etching the dielectric layer to expose at least a portion of the sublayer and to form a patterned substrate surface, exposing the patterned substrate surface to a plasma generated from a gas mixture consisting of argon, helium and hydrogen, wherein the gas mixture comprises about 25% by volume of argon, about 71% by volume of helium, and about 4% by volume of hydrogen, increasing the helium content of the plasma to increase etching of the patterned substrate surface, wherein the gas mixture comprises less than about 75% by volume of argon, and depositing a metal interconnect layer on the dielectric layer, as recited in claim 47, and claims 48-50 dependent thereon. Withdrawal of the rejection is respectfully requested.

In conclusion, the references cited by the Examiner, alone or in combination, do not teach, show, or suggest the invention as claimed.

Having addressed all issues set out in the Final Office Action, Applicant respectfully submits that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,



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